

CLAIMS

1. An image display device that includes a display screen where subpixels emitting colored light of each color are arranged cyclically so as to repeat every predetermined display pixel pitch at least in a predetermined cyclic arrangement direction and displays images on the display screen, the device comprising:

a data conversion portion for converting image data having pixel data each of which is associated with each data point when the data points are arranged at a data pixel pitch smaller than the display pixel pitch in the cyclic arrangement direction to converted image data having converted pixel data each of which is associated with each subpixel data corresponding to each of the subpixels; and

a display control portion for controlling the colored light of each of the subpixels arranged in the display screen based on each of the subpixel data that was converted by the data conversion portion, and thereby to display images on the display screen,

wherein, the data conversion portion performs, for each of the subpixels, an operation for generating subpixel data corresponding to the subpixel by adding weight depending on a distance between the center of the subpixel and each of the data points to plural color data corresponding to the colored light of the subpixel and combining the plural color data together, the plural color data, in a state, constituting plural pixel data associated with the data points that are present within a

predetermined area extending from the center of the subpixel to both sides in the cyclic arrangement direction, the state being a state where the data points are arranged in the display screen in a manner to overlap with the subpixels at positions where the respective data points are off the respective centers of the subpixels in the cyclic arrangement direction.

2. The image display device according to claim 1, wherein the predetermined area is an area extending from the center of the subpixel to both sides in the cyclic arrangement direction by an amount corresponding to one display pixel pitch respectively.

3. The image display device according to claim 1, wherein, with respect to the cyclic arrangement direction, the data pixel pitch is represented by an equation:

$$P_d = \{(n-i)/n\} \cdot P_o$$

where P_o denotes the display pixel pitch, n denotes the number of subpixels within one display pixel pitch, P_d denotes the data pixel pitch and i is an integer ($1 \leq i < n$).

4. The image display device according to claim 3, wherein when the number of subpixels n is three and the integer i is one, the data pixel pitch P_d is expressed as an equation:

$$P_d = (2/3) \cdot P_o$$

5. The image display device according to claim 1, further comprising, instead of the data conversion portion,

a data conversion portion for converting image data having pixel data each of which is associated with each data point when the data points are arranged at a data pixel pitch smaller than the display pixel pitch in the cyclic arrangement direction to each subpixel data corresponding to each of the subpixels,

wherein, the data conversion portion performs a first operation for each imaginary pixel corresponding to each of the subpixels and a second operation for each of the subpixels, the first operation being an operation for generating imaginary pixel data corresponding to one imaginary pixel corresponding to the subpixel by adding weight depending on the distance between the center of the subpixel and each of the data points to the plural pixel data associated with the data points that are present within the predetermined area extending from the center of the subpixel to both sides in the cyclic arrangement direction and combining the plural pixel data together in the state where the data points are arranged in the display screen in a manner to overlap with the subpixels at the positions where the respective data points are off the respective centers of the subpixels in the cyclic arrangement direction, the second operation being an operation for generating subpixel data corresponding to the subpixel by combining the plural color data corresponding to the colored light of the subpixel, and the plural color data constituting the plural imaginary pixel data that correspond to the imaginary pixel corresponding to the subpixel and imaginary pixels arranged around the imaginary pixel.

6. An image display method for an image display device that includes a display screen where subpixels emitting colored light of each color are arranged cyclically so as to repeat every predetermined display pixel pitch at least in a predetermined cyclic arrangement direction and displays images on the display screen, the method comprising:

performing, for each of the subpixels, an operation for generating subpixel data corresponding to the subpixel by adding weight depending on a distance between the center of the subpixel and each of the data points to plural color data corresponding to the colored light of the subpixel and combining the plural color data together, the plural color data, in a state, constituting plural pixel data associated with the data points that are present within a predetermined area extending from the center of the subpixel to both sides in the cyclic arrangement direction, the state being a state where data points are aligned at a data pixel pitch smaller than the display pixel pitch in the cyclic arrangement direction and are arranged in the display screen in a manner to overlap with the subpixels at positions where the respective data points are off the respective centers of the subpixels in the cyclic arrangement direction;

controlling the colored light of each of the subpixels arranged in the display screen based on each of the subpixel data generated by the operation; and

displaying images on the display screen.